SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form: Substance
Trade name: Spectinomycin dihydrochloride pentahydrate
EC-No.: 244-554-3
CAS-No.: 22189-32-8
Product code: S0188
Formula: C14H24N2O7 · 2HCl · 5H2O
Product group: Raw material

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Main use category: Professional use
Industrial/Professional use spec: For professional use only. Duchefa Biochemie B.V. products are intended only for "in vitro laboratory" research purposes.

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier
Duchefa Biochemie B.V.
A. Hofmanweg 71
2031 BH Haarlem - The Netherlands
T +31(0)23-5319093 - F +31(0)23-5318027
info@duchefa.nl

1.4. Emergency telephone number

Emergency number: Supplier contact information:
+31(0)23-5319093 (M-F 09:00-17:00)
+31(0)6-30109355 (outside office hours)

<table>
<thead>
<tr>
<th>Organisation/Company</th>
<th>Address</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Health Organization world directory of poison centres</td>
<td><a href="http://apps.who.int/poisoncentres/">http://apps.who.int/poisoncentres/</a></td>
<td>Consult website for a local poison centre</td>
</tr>
</tbody>
</table>

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Respiratory sensitisation, Category 1: H334
Skin sensitisation, Category 1: H317

Full text of H statements: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available
2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP): GHS08

Signal word (CLP): Danger

Hazard statements (CLP):
- H317 - May cause an allergic skin reaction.
- H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Precautionary statements (CLP):
- P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- P342+P311 - If experiencing respiratory symptoms: Call a POISON CENTER/doctor
- P302+P352 - IF ON SKIN: Wash with plenty of water.

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name: Spectinomycin dihydrochloride pentahydrate
CAS-No.: 22189-32-8
EC-No.: 244-554-3

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectinomycin dihydrochloride pentahydrate</td>
<td>(CAS-No.) 22189-32-8 (EC-No.) 244-554-3</td>
<td>&gt;= 95</td>
</tr>
</tbody>
</table>

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general: Seek medical attention if ill effect or irritation develops.
First-aid measures after inhalation: Assure fresh air breathing
   Allow the victim to rest.
First-aid measures after skin contact: Wash skin with plenty of water and soap.
First-aid measures after eye contact: Rinse with water.
First-aid measures after ingestion: Rinse mouth.

4.2. Most important symptoms and effects, both acute and delayed

No additional information available
4.3. Indication of any immediate medical attention and special treatment needed
No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media: Foam
Dry powder
Carbon dioxide
Water spray.

Unsuitable extinguishing media: Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture
Hazardous decomposition products in case of fire: When exposed to heat, may decompose liberating hazardous gases
- COx
- NOx.

5.3. Advice for firefighters
Precautionary measures fire: Avoid raising dust.
Firefighting instructions: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.
Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel
No additional information available

6.1.2. For emergency responders
Protective equipment: Equip cleanup crew with proper protection.
Emergency procedures: Ventilate area.

6.2. Environmental precautions
Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up
Methods for cleaning up: On land, sweep or shovel into suitable containers. Minimize generation of dust.

6.4. Reference to other sections
Reference to other sections (8, 13).

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling: Handle in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Keep container closed when not in use
Store in dry, cool, well-ventilated area.
Storage temperature: 2 - 8 °C
7.3. Specific end use(s)
For professional use only. Duchefa Biochemie B.V. products are intended only for "in vitro laboratory" research purposes.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
No additional information available

8.2. Exposure controls

Personal protective equipment:
Avoid all unnecessary exposure.

Hand protection:

<table>
<thead>
<tr>
<th>Type</th>
<th>Material</th>
<th>Permeation</th>
<th>Thickness (mm)</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloves</td>
<td>Nitrile rubber (NBR)</td>
<td>6 (&gt; 480 minutes)</td>
<td>0,11</td>
<td>EN 374</td>
</tr>
</tbody>
</table>

Eye protection:
Chemical goggles or safety glasses

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
Where excessive dust may result, wear approved mask. Type P2 (EN 143)

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid
Appearance : Crystalline powder.
Molecular mass : 495,34 g/mol
Colour : White
Colourless.

Odour : Odourless.
Odour threshold : No data available
pH : 3,8 - 5,6
Relative evaporation rate (butylacetate=1) : No data available

Melting point : 210 °C
Freezing point : No data available
Boiling point : No data available
Flash point : No data available
Auto-ignition temperature : No data available
Decomposition temperature : No data available
Flammability (solid, gas) : No data available
Vapour pressure : No data available
Relative vapour density at 20 °C : No data available
Relative density : No data available
Solubility : Readily soluble in water.
Log Pow: No data available
Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
Explosive properties: No data available
Oxidising properties: No data available
Explosive limits: No data available

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
Stable under normal conditions of storage, handling and use.

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
No additional information available

10.4. Conditions to avoid
Moisture
High temperature.

10.5. Incompatible materials
Strong oxidizers.

10.6. Hazardous decomposition products
Thermal decomposition generates:
- COx
- NOx.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Not classified
Skin corrosion/irritation: Not classified
pH: 3,8 - 5,6
Serious eye damage/irritation: Not classified
pH: 3,8 - 5,6
Respiratory or skin sensitisation: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
STOT-single exposure: Not classified
STOT-repeated exposure: Not classified
Aspiration hazard: Not classified
SECTION 12: Ecological information

12.1. Toxicity
No additional information available

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available

12.5. Results of PBT and vPvB assessment
No additional information available

12.6. Other adverse effects
Additional information: Avoid release to the environment

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Product/Packaging disposal recommendations: Dispose in a safe manner in accordance with local/national regulations.
Ecology - waste materials: Avoid release to the environment.

SECTION 14: Transport information

In accordance with ADR / IATA / IMDG

<table>
<thead>
<tr>
<th>ADR</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1. UN number</td>
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</tr>
<tr>
<td>14.2. UN proper shipping name</td>
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<td>14.3. Transport hazard class(es)</td>
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</tr>
<tr>
<td>14.4. Packing group</td>
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</tr>
<tr>
<td>14.5. Environmental hazards</td>
<td>Not regulated</td>
<td>Not regulated</td>
</tr>
</tbody>
</table>

14.6. Special precautions for user

- Overland transport
  Not regulated
- Transport by sea
  Not regulated
- Air transport
Not regulated

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations
No REACH Annex XVII restrictions
Spectinomycin dihydrochloride pentahydrate is not on the REACH Candidate List
Spectinomycin dihydrochloride pentahydrate is not on the REACH Annex XIV List

15.1.2. National regulations
Ensure all national/local regulations are observed.

Germany
Reference to AwSV
12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV
Water hazard class (WGK) 1, low hazard to waters
Is not subject of the 12. BlmSchV (Hazardous Incident Ordinance)

Netherlands
SZW-lijst van kankerverwekkende stoffen
SZW-lijst van mutagene stoffen
NIET-limitatieve lijst van voor de voortplanting gifstige stoffen – Borstvoeding
NIET-limitatieve lijst van voor de voortplanting gifstige stoffen – Vruchtbaarheid
NIET-limitatieve lijst van voor de voortplanting gifstige stoffen – Ontwikkeling
The substance is not listed

Denmark
Recommendations Danish Regulation
Young people below the age of 18 years are not allowed to use the product

15.2. Chemical safety assessment
No chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

<table>
<thead>
<tr>
<th>Indication of changes</th>
<th>New information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4 Emergency telephone</td>
<td>Modified</td>
</tr>
<tr>
<td>2.1 Classification according to Regulation (EC) No. 1272/2008 [CLP]</td>
<td>Added</td>
</tr>
<tr>
<td>2.2 Precautionary statements (CLP)</td>
<td>Added</td>
</tr>
<tr>
<td>8.2 Hand protection</td>
<td>Modified</td>
</tr>
<tr>
<td>8.2 Respiratory protection</td>
<td>Modified</td>
</tr>
</tbody>
</table>

Abbreviations and acronyms:

ATE Acute Toxicity Estimate
Spectinomycin dihydrochloride pentahydrate

Safety Data Sheet

according to Regulation (EU) 2015/830

13/06/2018 Duchefa Biochemie B.V.

EN (English)  SDS Ref.: S0188  8/8

<table>
<thead>
<tr>
<th>ADR</th>
<th>European Agreement concerning the International Carriage of Dangerous Goods by Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCF</td>
<td>Bioconcentration factor</td>
</tr>
<tr>
<td>CLP</td>
<td>Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008</td>
</tr>
<tr>
<td>DPD</td>
<td>Dangerous Preparations Directive 1999/45/EC</td>
</tr>
<tr>
<td>DSD</td>
<td>Dangerous Substances Directive 67/548/EEC</td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods</td>
</tr>
<tr>
<td>LC50</td>
<td>Median lethal concentration</td>
</tr>
<tr>
<td>LD50</td>
<td>Median lethal dose</td>
</tr>
<tr>
<td>LOAEL</td>
<td>Lowest Observed Adverse Effect Level</td>
</tr>
<tr>
<td>NOAEC</td>
<td>No-Observed Adverse Effect Concentration</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent Bioaccumulative Toxic</td>
</tr>
<tr>
<td>SDS</td>
<td>Safety Data Sheet</td>
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Other information: REACH Disclaimer:
This information is based on current knowledge. Consistency of data in the SDS with CSR is considered, as far as the information is available at the time of compilation (cfr Revision date and Version number). DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness.

Full text of H- and EUH-statements:

| Resp. Sens. 1 | Respiratory sensitisation, Category 1 |
| Skin Sens. 1 | Skin sensitisation, Category 1 |
| H317 | May cause an allergic skin reaction. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |

SDS Biochemicals version 2018
This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.